UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ERHAN H. GUNDAY,
LAWRENCE J. GERRANS, and LON CHU

Appeal 2016-000407
Application 13/440,853[1]
Technology Center 3700

Before JENNIFER D. BAHR, EDWARD A. BROWN, and ANTHONY KNIGHT, *Administrative Patent Judges*.

KNIGHT, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's non-final decision rejecting claims 1–49. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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[1] According to Appellants, the real party in interest is Sanovas, Inc. App. Br. 2.

CLAIMED SUBJECT MATTER

The claims are directed to "a system and method for visualizing and measuring the interior of a body cavity . . . with a balloon catheter." Spec. ¶ 2. Claims 1 and 30 are independent. Claim 1, reproduced below, is illustrative of the claimed subject matter:

> 1. An imaging system for providing a 3-dimensional image of the interior of a cavity comprising:
>
> a balloon catheter;
>
> a mesh affixed to the balloon catheter, said mesh having members extending longitudinally and circumferentially about said balloon catheter, said mesh having columns and rows that intersect each other at a node;
>
> a controller coupled to the balloon catheter for controlling the inflation of said balloon catheter;
>
> wherein each member of said mesh having at least one electrical characteristic that changes as the member is deformed such that, when the member comprises a length (L) a measured electrical characteristic will be different than when the member comprises a length (L_1) where L_1 is greater than L;
>
> wherein the controller determines the at least one electrical characteristic from each member and utilizes the measured electrical characteristics to generate a three-dimensional rendering of an interior surface of the cavity.

Appeal Br. 15 (Claims App.).

EVIDENCE RELIED ON BY THE EXAMINER

Laptewicz et al.	US 5,653,684	Aug. 5, 1997
Shah	US 6,081,737	June 27, 2000
Gazdzinski	US 2001/0051766 A1	Dec. 13, 2001
Okumura et al.	US 7,113,569 B2	Sept. 26, 2006
Honour et al.	US 2007/0219551 A1	Sept. 20, 2007
Harlev et al.	US 2007/0299352 A1	Dec. 27, 2007

Johnson et al.	US 2008/0208174 A1	Aug. 28, 2008
Gunday et al.	US 2010/0121270 A1	May 13, 2010
de Graff et al.	US 2011/0034912 A1	Feb. 10, 2011

REJECTIONS

The Examiner made the following rejections:

1. Claims 1–3, 6, 10, 16, 26, 27, 30, 31, 33, 36, 44, 45, 48, and 49 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shah, de Graff et al. (hereinafter "de Graff"), and Laptewicz et al. (hereinafter "Laptewicz").

2. Claims 4, 5, 7– 9, 11, 12, 28, 29, 32, 34, 46, and 47 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shah, de Graff, Laptewicz, and Harlev et al. (hereinafter "Harlev").

3. Claims 13 and 35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shah, de Graff, Laptewicz, and Okumura et al. (hereinafter "Okumura").

4. Claims 14 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shah, de Graff, Laptewicz, and Gunday et al. (hereinafter "Gunday").

5. Claims 17–20 and 37–39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shah, de Graff, Laptewicz, and Johnson et al. (hereinafter "Johnson").

6. Claims 21 and 40 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shah, de Graff, Laptewicz, Johnson, and Honour et al. (hereinafter "Honour").

7. Claims 22, 23, and 41 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shah, de Graff, Laptewicz, Johnson, Honour, and Ghaffari et al. (hereinafter "Ghaffari").

8. Claims 24, 25, 42, and 43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shah, de Graff, Laptewicz, Johnson, and Gazdzinski.

OPINION

Rejection 1
Claim 1

The Examiner finds that Shah teaches a three-dimensional imaging system for mapping a cavity in the body. Also, the Examiner finds that Shah teaches a balloon catheter having "a mesh disposed circumferentially about the catheter." Final Act. 3. Furthermore, the Examiner finds that Shah teaches that "each member of the mesh [has] an electrical characteristic that changes as the member is deformed." *Id.* According to the Examiner, Shah does not teach "a balloon catheter or the mesh members extending longitudinally around the catheter or that the mesh comprises a grid, or the mesh being affixed to an outer surface of the balloon catheter." *Id.* The Examiner relies upon de Graff to teach a mesh affixed to an outer surface of a balloon and Laptewicz to teach a wire mesh having rows and columns. *Id.* at 3–4.

Appellants argue that they are "not entirely sure how Shah and de Graff et al. could actually be combined." Appeal Br. 11. In particular, Appellants state that "Shah teaches 'bow-type springs' that deform to create a change in resistance whereas de Graff et al. teaches 'devices' that are interconnected with stretchable interconnects" and "[t]hese are mutually

exclusive measurement systems." *Id.* Continuing with their argument, Appellants posit that "[i]f the 'bow-type springs' of Shah were replaced with the 'devices' and stretchable interconnects of de Graff et al., the device would not be able to measure a change in an electrical characteristic of the mesh as claimed." *Id.* Further, Appellants argue that "Laptewicz does not provide for any measurement of an electrical characteristic based on a change of length." *Id.* at 12.

Responding to Appellants' arguments, the Examiner states that he "is merely using the design of the mesh [grid of de Graff]." Ans. 12. Further, the Examiner states that he "is not using the functionality of . . . de Graff." *Id.* With regards to Laptewicz, the Examiner states that "Laptewicz is not being used to replace the device of Shah but is merely being used to show the idea of columns and rows intersecting at a node as a knot." *Id.* at 13. Appellants reply by pointing to these passages and arguing that "the result of the combination provided by the Examiner is the measurement system of Shah in which a grid (from de Graff et al.) is formed as knots (from Laptewicz et al.), where the 'grid' and the 'knots' provide no function or purpose." Reply Br. 3.

Analysis

Claims 1 requires, among other things, that "each member of said mesh having at least one electrical characteristic that changes as the member is deformed such that, when the member comprises a length (L) a measured electrical characteristic will be different than when the member comprises a length (L_1) where L_1 is greater than L." Appeal Br. 15 (Claims App.). The

Examiner has not provided any evidence or technical reasoning showing that the combination of Shah, de Graff, and Laptewicz teaches or suggests this claim limitation. As Appellants indicate, Shah discloses bow type springs that deform; however, Shah does not teach that an electrical characteristic *of the springs* changes as the springs deform. While it is appreciated that Shah teaches a change in electrical resistance, a closer reading of Shah indicates that "[t]he electrical resistance presented by resistive strip **28** varies linearly with the distance between proximal end **27** of the bow-type spring **25** and the point of connection of wire **30** to resistive strip **28**." Shah 4:37–41. Thus, as bow-type spring 25 deflects, such that its proximal end 27 slides proximally along resistive strip 28, the resistance of the circuit is reduced. *Id.* 4:41–44. However, this change in resistance of the circuit, including both spring 25 and resistive strip 28, is not a change in an electrical characteristic of the member (spring 25) that is deformed. The Examiner's reliance upon Shah as teaching a member "having an electrical characteristic that changes as the member is deformed" (Final Act. 3) is thus misplaced.

As stated by the Examiner, de Graff is not relied upon for any functionality and is thus unavailing to cure the deficiency of Shah. Likewise, the Examiner states Laptewicz is not relied upon to replace the device of Shah and thus Laptewicz is unavailing to cure this deficiency. Therefore, it is apparent that the proposed combination of Shah, de Graff, and Laptewicz does not teach or suggest all of the limitations of claim 1.

Moreover, even accepting the Examiner's finding that Shah teaches a member having an electrical characteristic that changes as the member is deformed, we share Appellants' confusion about how or why exactly Shah and de Graff could actually be combined to arrive at the claimed subject

matter. *See* Appeal Br. 11. As Appellants point out, De Graff provides imaging or sensing devices interconnected with stretchable interconnects such that the devices contact the surface of tissue to perform various measurements. *Id., see* de Graff ¶¶ 7, 9, 101. The devices, not the stretchable interconnects, of de Graff perform the measurements. The Examiner does not identify, nor do we discern on our own, any teaching in de Graff that the stretchable interconnects have an electrical characteristic that changes as they are deformed. The Examiner determines that it would have been obvious to modify "Shah with de Graff so that there is even expansion and contact with the cavity wall." Final Act. 3–4. As de Graff provides this uniform expansion and conforming contact with the cavity wall by providing the stretchable interconnects disclosed therein, and those stretchable interconnects are not disclosed as having an electrical characteristic that changes as the member is deformed, it is not sufficiently clear how the references would be combined to arrive at the claimed subject matter.

For the above reasons, the Examiner has not established that the subject matter of claim 1 would have been obvious. Thus, the rejection of claim 1 is not sustained.

Claims 2, 3, 6, 10, 16, 26, and 27

Claims 2, 3, 6, 10, 16, 26, and 27 depend from claim 1. *See* Final Act. 3–4. The Examiner's rejection of these claims does not overcome the deficiency identified above for claim 1. Accordingly, for the same reasons as discussed *supra*, the rejection of claims 2, 3, 6, 10, 16, 26, and 27 is not sustained.

Claim 30

Claim 30 is an independent claim directed to the method of providing a 3-dimensional image of a cavity. Appeal Br. 19 (Claims App.). Claim 30 contains limitations similar to claim 1, as discussed above. The rejection of claim 30 suffers from the same deficiency as that of claim 1. Accordingly, the rejection of claim 30 is not sustained.

Claims 31, 33, 36, 44, 45, 48, and 49

Claims 31, 33, 36, 44, 45, 48, and 49 depend from claim 30. *See Id.* The Examiner's rejection of these claims does not overcome the deficiency identified above for claim 30. Accordingly, for the same reasons as discussed *supra*, the rejection of claims 31, 33, 36, 44, 45, 48, and 49 is not sustained.

Rejection 2

Claims 4, 5, 7–9, 11, 12, 28, 29, 32, 34, 46, and 47

The Examiner's rejection of claims 4, 5, 7– 9, 11, 12, 28, 29, 32, 34, 46, and 47 as unpatentable over Shah, de Graff, Laptewicz, and Harlev is based on the same unsupported findings discussed above with respect to independent claims 1 and 30, respectively. *See* Final Act. 4–5. The Examiner does not rely on Harlev to remedy the deficiencies of Shah, de Graff and Laptewicz. Accordingly, for reasons similar to those discussed above, we do not sustain the Examiner's rejection of claims 4, 5, 7– 9, 11, 12, 28, 29, 32, 34, 46, and 47 as unpatentable over Shah, de Graff, Laptewicz, and Harlev.

Rejection 3

Claims 13 and 35

The Examiner's rejection of claims 13 and 35 as unpatentable over Shah, de Graff, Laptewicz, and Okumura is based on the same unsupported findings discussed above with respect to independent claims 1 and 30, respectively. *See* Final Act. 6. The Examiner does not rely on Okumura to remedy the deficiencies of Shah, de Graff and Laptewicz. Accordingly, for reasons similar to those discussed above, we do not sustain the Examiner's rejection of claims 13 and 35 as unpatentable over Shah, de Graff, Laptewicz, and Okumura.

Rejection 4

Claims 14 and 15

The Examiner's rejection of claims 14 and 15 as unpatentable over Shah, de Graff, Laptewicz, and Gunday is based on the same unsupported findings discussed above with respect to independent claim 1. *See* Final Act. 6. The Examiner does not rely on Gunday to remedy the deficiencies of Shah, de Graff and Laptewicz. Accordingly, for reasons similar to those discussed above, we do not sustain the Examiner's rejection of claims 14 and 15 as unpatentable over Shah, de Graff, Laptewicz, and Gunday.

Rejection 5

Claims 17–20 and 37–39

The Examiner's rejection of claims 17–20 and 37–39 as unpatentable over Shah, de Graff, Laptewicz, and Johnson is based on the same unsupported findings discussed above with respect to independent claims 1

and 30, respectively. *See* Final Act. 6–7. The Examiner does not rely on Johnson to remedy the deficiencies of Shah, de Graff and Laptewicz. Accordingly, for reasons similar to those discussed above, we do not sustain the Examiner's rejection of claims 17–20 and 37–39 as unpatentable over Shah, de Graff, Laptewicz, and Johnson.

Rejection 6

Claims 21 and 40

The Examiner's rejection of claims 21 and 40 as unpatentable over Shah, de Graff, Laptewicz, Johnson, and Honour is based on the same unsupported findings discussed above with respect to independent claims 1 and 30, respectively. *See* Final Act. 7–8. The Examiner does not rely on Johnson or Honour to remedy the deficiencies of Shah, de Graff and Laptewicz. Accordingly, for reasons similar to those discussed above, we do not sustain the Examiner's rejection of claims 21 and 40 as unpatentable over Shah, de Graff, Laptewicz, Johnson, and Honour.

Rejection 7

Claims 22, 23, and 41

The Examiner's rejection of claims 22, 23, and 41 as unpatentable over Shah, de Graff, Laptewicz, Johnson, Honour, and Ghaffari is based on the same unsupported findings discussed above with respect to independent claims 1 and 30, respectively. *See* Final Act. 8–9. The Examiner does not rely on Johnson, Honour, or Ghaffari to remedy the deficiencies of Shah, de Graff and Laptewicz. Accordingly, for reasons similar to those discussed above, we do not sustain the Examiner's rejection of claims 22, 23, and 41

as unpatentable over Shah, de Graff, Laptewicz, Johnson, Honour, and Ghaffari.

Rejection 8

Claims 24, 25, 42, and 43

The Examiner's rejection of claims 24, 25, 42, and 43 as unpatentable over Shah, de Graff, Laptewicz, Johnson, and Gazdzinski is based on the same unsupported findings discussed above with respect to independent claims 1 and 30, respectively. *See* Final Act. 9. The Examiner does not rely on Johnson, or Gazdzinski to remedy the deficiencies of Shah, de Graff and Laptewicz. Accordingly, for reasons similar to those discussed above, we do not sustain the Examiner's rejection of claims 24, 25, 42, and 43 as unpatentable over Shah, de Graff, Laptewicz, Johnson, and Gazdzinski.

DECISION

The Examiner's decision to reject claims 1–49 under 35 U.S.C. § 103 is reversed.

REVERSED